

What is claimed is:

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1. A work holder arrangement for supporting a work article at a desired orientation with
2 respect to a support structure, the work holder arrangement comprising:

4 a first clamp member for coupling with the support structure, said first clamp member having
clamped and unclamped states;

6 a second clamp member for coupling with the work article, said second clamp member having
clamped and unclamped states;

a tube portion coupled to a selected one of said first and second clamp members;

8 a shaft portion coupled to the other of said first and second clamp members, said shaft portion
being accommodated coaxially within said tube portion;

10 an expansion portion arranged coaxially with said shaft portion within said tube portion; and
elongated means for engaging with said expansion portion and applying an axial force thereto,

12 whereby upon the application of the axial force, said expansion portion is urged transaxially against
an interior surface of said tube portion, and the selected one of said first and second clamp members
14 simultaneously is urged into the clamped state.

16 2. The work holder arrangement of claim 1, wherein said expansion portion comprises
a transverse ramp portion, and said shaft portion is terminated at an end portion thereof distal from
the selected one of said first and second clamp members with a corresponding transverse ramp
18 portion, wherein the transverse ramp portion of said expansion portion and said corresponding
transverse ramp portion of the end portion of said shaft portion are arranged to communicate with
20 each other.

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3. The work holder arrangement of claim 2, wherein said expansion portion is engaged with said elongated means, and the axial force applied thereto is responsive to a displacement of said elongated means with respect to said expansion portion.

3 4. The work holder arrangement of claim 2, wherein the communication between the transverse ramp portion of said expansion portion and said corresponding transverse ramp portion of the end portion of said shaft portion precludes rotation of said expansion portion as said elongated means is rotated.

4 5. The work holder arrangement of claim 1, wherein said shaft portion has a longitudinal bore therethrough for accommodating said elongated means.

5 6. The work holder arrangement of claim 4, wherein said longitudinal bore is axially arranged and dimensioned to accommodate a transaxial displacement of said elongated means.

6 7. The work holder arrangement of claim 1, wherein said shaft portion and said tube portion each have a circular cross-sectional configuration, whereby said expansion portion can be urged transaxially against an interior surface of said tube portion to fix said shaft portion at any axial location within said tube portion within a predetermined limit and at any rotational orientation between said shaft and tube portions.

7 8. The work holder arrangement of claim 1, wherein the support structure is a support bar having a predetermined cross-sectional configuration, and said first clamp member is configured to be rotatable about, and slidable axially therealong, said support bar when said first clamp member is in the unclamped state, and fixed axially and rotationally thereto when said first clamp member is in the clamped state.

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8 ~~9~~ The work holder arrangement of claim 1, wherein there is further provided a work
2 article engagement arrangement having a predetermined configuration, and said second clamp
member is correspondingly configured, whereby said work article engagement arrangement is
4 angularly displaceable when said second clamp member is in the unclamped state, and fixed angularly
with respect thereto when said second clamp member is in the clamped state.

6 9 ~~10~~ The work holder arrangement of claim ~~9~~⁸, wherein said work article engagement
arrangement has a substantially spherical configuration and said second clamp member is
8 correspondingly configured to have a concave configuration.

10 10 ~~11~~ The work holder arrangement of claim ~~9~~⁸, wherein said work article engagement
arrangement has a substantially concave configuration and said second clamp member is
correspondingly configured to have a substantially cylindrical internal configuration.

12 11 ~~12~~ The work holder arrangement of claim 1, wherein said first clamp member and said
shaft portion are integrally formed with each other.

14 12 ~~13~~ The work holder arrangement of claim ~~12~~¹¹, wherein said expansion portion has a cross-
sectional configuration that corresponds to the cross-sectional configuration of said shaft portion.

16 13 ~~14~~ The work holder arrangement of claim 1, wherein the axial force applied by said
elongated means urges said first clamp portion and said expansion portion toward each other.

18 14 ~~15~~ The work holder arrangement of claim 1, wherein said second clamp member and said
tube portion are integrally formed with each other.

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15 16. A work holder support arm for supporting a work article at a desired orientation with
-2 respect to a support structure, the work holder arrangement comprising:

4 a first clamp member having clamped and unclamped states for coupling with the support
structure, said first clamp member having an opening therethrough for accommodating the support
structure, and further having a through-hole arranged transverse to the opening;

6 a shaft portion coupled to said first clamp member, said shaft portion having a longitudinal
bore therethrough, the longitudinal bore being arranged to be axially in registration with the through-
8 hole of said first clamp member;

10 a second clamp member for coupling with the work article, said second clamp member having
clamped and unclamped states;

12 a tube portion coupled to said second clamp member for accommodating telescopically
therewithin said shaft portion;

14 an expansion portion arranged coaxially with said shaft portion within said tube portion, said
expansion portion having a threaded section; and

16 elongated means having a threaded portion for engaging with the threaded section of said
expansion portion and applying an axial force thereto, whereby upon the application of the axial force,
said expansion portion is urged transaxially against an interior surface of said tube portion, and the
18 selected one of said first and second clamp members simultaneously is urged into the clamped state.

14 17. The work holder support art of claim 16, wherein said first clamp member and said
20 shaft portion are integrally formed.

17 18. The work holder support art of claim 16, wherein said second clamp member and said
22 tube portion are integrally formed.

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18 19. The work holder support art of claim 15, wherein said expansion portion and said shaft
2 portion have corresponding transverse ramps arranged to communicate with each other, whereby
upon the application of the axial force, said expansion portion is urged along the transverse ramp of
4 said shaft portion and substantially radially against an interior surface of said tube portion.

19 20. The work holder support art of claim 15, wherein there is further provided a work
6 article engagement arrangement having a predetermined configuration, and said second clamp
member is correspondingly configured, whereby said work article engagement arrangement is
8 angularly displaceable when said second clamp member is in the unclamped state, and fixed angularly
with respect thereto when said second clamp member is in the clamped state.

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20 ~~21.~~ A work holder support arm for supporting a work article at a desired orientation with
2 respect to a support structure, the work holder arrangement comprising:

4 a first clamp member having open and clamped states for coupling with the support structure,
said first clamp member being installable on, and movable with respect to, the support structure when
said first clamp member is in the open state;

6 a second clamp member for coupling with the work article, said second clamp member having
clamped and unclamped states;

8 a shaft portion coupled to a selectable one of said first and second clamp members, said shaft
portion having a longitudinal bore therethrough;

10 a tube portion coupled to the other of said first and second clamp members for
accommodating telescopically therewithin said shaft portion;

12 an expansion portion arranged coaxially with said shaft portion within said tube portion, said
expansion portion having a threaded section; and

14 elongated means having a threaded portion for engaging with the threaded section of said
expansion portion and applying an axial force thereto, whereby upon the application of the axial force,
16 said expansion portion is urged transaxially against an interior surface of said tube portion, and the
selected one of said first and second clamp members simultaneously is urged into the clamped state.

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18 21 ~~22.~~ The work holder support arm of claim ~~21~~ ²⁰, wherein said first clamp member is coupled
to said shaft portion and said second clamp member is coupled to said tube portion.

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22 23.

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The work holder support arm of claim 21, wherein said first clamp member is provided
with:

a hinged portion that is pivotally rotatable about a hinge when said first clamp member is in
the open state; and

a locking element for urging said hinged portion forcefully into a closed condition,
corresponding to the clamped state of said first clamp member.

23 24.

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The work holder support arm of claim 23, wherein said locking element comprises a
threaded fastener.